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Pricing Environmental Amenities

An Assessment of the Contingent Valuation Method

Patricia A. Gwartney and Anthony V. Silvaggio

1 How much would you pay to improve the viability of native salmon in the Columbia River system, to protect an urban garden, or for a breath of fresh air? Putting a price tag on an ocean view may seem ludicrous, but U.S. public policy increasingly requires social scientists to estimate the monetary value of the goods and services nature provides humans.

2 Spurred by industrial disasters, regulatory decisions, court orders, and resource management strategies over the last 20 years, state and local governments, courts, municipal utilities, trade representatives, and tribal governments need progressively more environmental valuation for natural resource planning, policymaking, litigation, and damage assessment (Breedlove, 1999). We are writing an essay that will introduce non-economists to contingent valuation (CV) – a survey method developed by economists to estimate prices for environmental assets (Silvaggio and Gwartney, 2005).

3 Theoretically, markets are essential for price-setting, but what are the markets for intangible environmental benefits? Some natural resources' concrete, material uses result in standard markets to exchange them, like logs. But many environmental assets' uses do not translate into market transactions. What is the market a beautiful view of the Grand Canyon? Where would you go to voice how much you are willing to pay for improved visibility in the Grand Canyon? Without markets or prices to associate with the Grand Canyon's visibility levels, the valuation task is impossible in conventional economic theory. This represents one central conundrum in environmental valuation: What is the value of an environmental amenity without a market? Moreover, can money fully capture environmental assets' expressive, aesthetic, spiritual, or sentimental qualities or the intangibly complex environmental benefits of protecting ecosystems, biodiversity, and human welfare?

4 Lacking markets to observe people's purchases and use behaviors that set prices, economists developed various direct and indirect value market approaches to valueenvironmental goods (Knight and Bates, 1995). The essay on which we are working

reviews examples of those methods, describing their strengths and weaknesses. CV is a direct market approach of estimating the nonuse, nonmarket values of public goods, in that people directly tell researchers their preferences for tradeoffs between different types or levels of goods (Mitchell and Carson, 1989). CV invokes survey methods to elicit people's responses to proposed improvements in public goods; respondents' aggregated answers simulate market-bidding processes. The method is called "contingent" valuation because surveys ask about respondents' willingness to pay for proposed improvements to nonmarket public goods, contingent upon the hypothetical benefits they might enjoy from those improvements, and the values respondents provide are contingent upon markets that surveys simulate (Portney, 2000).

5 Most simply, CV surveys present respondents with scenarios describing problems with focal public goods, explain the need to fund specific improvements in those goods, and then ask questions eliciting how much respondents would pay to improve them. An example CV survey might describe polluted water in a public lake, explain that an agency will improve water quality by 25 percent, by 50 percent, and by 75 percent, and determine the highest amount each respondent is willing to pay for each level of improvement to the lake water. The aggregated answers represent a schedule of prices that people will pay for a public good. CV surveys enable researchers to estimate nonuse values for environmental amenities that cannot be bought and sold (scenic views), services or products that do not yet exist (proposed wetlands), things that benefit others (highway overpasses for wildlife habitat), and things that people may never use (wilderness areas, historic artifacts) (Navrud and Ready, 2002). By simulating markets in surveys, researchers have successfully revealed nonuse values for all sorts of nonmarket environmental assets, and these compare well to use values and prove reliable across populations and over time. Thus, the CV method appears to answer a key theoretical puzzle in environmental economics: How to estimate prices for natural amenities without markets.

6 CV research has been central to environment-related public policymaking for two decades, but it remains controversial. We, like many social and environmental scientists, have regarded CV research with skepticism, if not condemnation, having witnessed numerous government-contracted CV studies of dubious quality. In conducting this research, however, we changed our minds. CV surveys are very challenging to design and implement. Poor instrument design and botched survey administration have contributed to CV's contentious history and accelerated study costs. Economists who conduct most CV studies typically lack advanced survey training and many regard survey data with skepticism. Yet our review found that, when investigators follow proper methods, CV surveys provide valid and reliable monetary estimates of nonmarket, nonuse environmental amenities. It also became apparent that much of the controversy around CV is artificial. The CV method represents an incomparable route to compensate society for environmental poisoning, contamination, and defilement.

7 Our essay-in-progress reviews the CV method's history from 1947 to the present, including the theory behind economic valuation of environmental amenities, key studies in the evolution of the CV method, how CV research compares to other types of environmental valuation, how federal legislation came to sanction CV, complications across different branches of government, and objections from the extractive industries. Despite relentless challenges over 20 years, courts continue to favor, and federal rules continue to mandate, applying CV to measure nonuse values. Long delays have

disheartened stakeholders, and ongoing contention has created uncertainty and disagreement. Meanwhile, the public bears the long-term costs to human health and welfare (Grayson and Halpin, 2002).

8 Over 2,000 publications and studies challenge the CV method, its underlying theoretical constructs, and its implementation (Carson, 2000). Resource extraction industries finance some of this effort (Milgrom, 1993; Diamond and Hausman, 1993), funding researchers who deliver findings selected for sensationalism; e.g., who believe that "an individual would pay ... hundreds of dollars for a duck when they will only pay $2.00 for a chicken at the grocery store?" (Plott, 1993, p. 470). We outline opponents' arguments. Most of the methodological disputes rest upon standard criticisms of surveys, e.g., respondents' reports of their behaviors may not match their real behaviors. Other criticisms rest upon CV respondents' consistent tendency to answer willingness-to-pay questions with excessive zeroes and infinite numbers. We apply recent findings in the psychology of survey response to explain this pattern of answers. We also unravel the Catch-22 quality of the most influential theoretical disputes and point out their logical conclusion, the privatization of public environmental amenities.

9 The CV method succeeds in measuring nonuse values for many sorts of nonmarket environmental assets. The consequences of empirically- and theoretically-defensible CV research strikes the collective heart of the extractive industry. Fully implemented, it would require named firms that damage, destroy, poison, or otherwise defile environmental assets to recompense the human groups suffering losses. No longer would citizens bear the long- and short-term costs of private companies' actions. Amends could cost companies millions, cause reputational loss, prevent further natural resource expropriation, and erode profits. Rational, planful industry interest groups avoid these consequences by funding anti-CV studies, conferences, publications, and individual researchers, by dishing up controversial materials to influence, sidetrack, and confuse various levels of government, and by stalling implementation of CV findings to delay damage disbursements and discourage challengers.

10 The CV method is innately and uniquely a product of survey research. For success and legitimacy, CV surveys must meet the strict requirements of both economic theory and survey methodology. For the former, surveys must operationalize theoretical concepts to measure accurately the nonuse values of public goods. To meet methodological standards, researchers must proficiently attend to survey design's scientific principles to minimize measurement error and avoid bias. The essay outlines best practices for implementing CV surveys, incorporating recent methodological research in the psychology of survey response not yet found in CV studies.

11 While we maintain deep reservations about monetarily valuing nature, currently the CV method is our best tool to rectify environmental wrongs. We urge fellow social and environmental scientists to learn the tools to conduct CV research and the skills to wield CV findings in public planning, policymaking, litigation, and damage assessment. Effectively-conducted CV surveys are critical to developing and implementing sound environmental policy. As long as federal laws and regulations in the USA continue to sanction CV estimates, the method has exceptional potential to remedy environmental wrongs, improve natural resource amenities, and halt industry's externalizing the long-term costs of environmental damage.

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ABSTRACTS

The authors are preparing an essay that will introduce non-economists to contingent valuation (CV) – a survey method developed by economists to estimate prices for environmental assets. Here, they present the CV method with references in the scieitific literature describing its development and evolution.

Mettre un prix sur les agrements environnementaux, une évaluation de la méthode de valuation contingente : .Les auteurs préparent actuellement un rapport pour présenter la

méthode de valuation contingente (CV) aux non-économistes. La CV est une méthdode par enquête par questionnaire développée par des économistes pour estimer la valeur monétaire des agréments environnementaux. Ici, les auteurs présentent la méthode CV avec des références dans la littérature scientifique qui décrivent son développement et son évolution.

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Mots-clés: Economie de l'environnement, Enquête par questionnaire, Valuation contingente (CV)
Keywords: Contingent Valuation (CV), Environmental Economics, Survey Research

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